From:	Christ, Lisa
To:	Hernandez-Quinones, Samuel
Subject:	RE: checking in on Rads PAG briefing materials
Date:	Monday, April 21, 2014 5:44:54 PM
Attachments:	Briefing for Eric Burneson_LC.docx

Hi Sam,
Looks good. Attached are my edits/comments. Let me know if you have questions or concerns.
Thanks-
Lisa

From: Hernandez-Quinones, Samuel
Sent: Monday, April 21, 2014 4:37 PM
To: Christ, Lisa
Subject: RE: checking in on Rads PAG briefing materials

Revised file with Attachments included.

Sam

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"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Monday, April 21, 2014 3:02 PM
To: Hernandez-Quinones, Samuel
Subject: RE: checking in on Rads PAG briefing materials

Great thanks – I'll take a look

From: Hernandez-Quinones, Samuel
Sent: Monday, April 21, 2014 3:00 PM
To: Christ, Lisa
Subject: RE: checking in on Rads PAG briefing materials

Hi Lisa,
Please see attached. I first tried presenting this information in a Power Point format but it was not working for me. So I decided that at this stage it is better to use the briefing sheet and complement the discussion with the insertion the of the tables that were developed.
Here is the briefing sheet, the attachements mentioned in here are basicly an extract of the relevant tables. I am still working on the formating to make the tables look good, but here you get a feel of what we are doing. I will send the other attachements very soon.
Sam

From: Christ, Lisa
Sent: Monday, April 21, 2014 2:09 PM
To: Hernandez-Quinones, Samuel

Subject: checking in on Rads PAG briefing materials

Hi Sam,

I wanted to see how you're doing developing the briefing materials for tomorrow. With tomorrow being a cleanup day we won't have much time then to work on this. Let me know if you have questions or concerns.

Thanks-

Lisa

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Briefing for Eric Burneson
Regarding Trigger Levels on
Drinking Water Protective Action Guide
April 22, 2014

Purpose:

- Provide options for developing a drinking water PAG.
- Seek guidance on selection of guiding principles and assumptions for the PAG.

Agenda (Proposed):

- Drinking Water PAG Options based on Risk Levels – (Sam H)

Relevant Information:

- Current DW Regulations for Radionuclides (Combined Radium 226+228 & Beta and Photon) Generally Fall within the lifetime cancer risk range of 10^{-4} to 10^{-6} from exposure (65 FR 76712). This assumes a life time exposure of 70 years.

- DW Advisory issued in Japan during Fukushima was 100 Becquerel/liter for Infants and 300 Becquerel/liter for Adults (about 2700 pCi/L for Infants & 8000 pCi/L for Adults).

Assumptions & Scenarios Analyzed for DW Trigger Levels:

Exposure Duration: (e.g. 30 to 365 days)

Water Ingestion Rates: For each Subpopulation studied

Calculated Risk Range: Excess cancer cases from exposure to radiation in DW

Critical subpopulation: Based on calculated Risk Data for Infants, Children, Adults, etc.

Results from Assessment:

Exposure Duration:
From the assessment we found that, for low level radiation, the risks do no vary with the duration of exposure. So in making the assumption that the exposure is distributed over one year yields no difference in risk if the exposure is 30 days or 365 days. (See Attachment #1).

- The one year timeframe is consistent with other intermediate phase PAGs.
- Emergency responders will not need to make assumptions about the duration of the event.

Water Ingestion Rates:
Ingestion rates have been incorporated from Federal Guidance 13 (See Attachment #2).

- The ingestion rates in Federal Guidance 13 are consistent with ingestion rates in the EPA's Exposure Factors Handbook.

- The ingestion rates are consistent with other PAGs (i.e., FDA food PAG).

Calculated Risk Ranges:
Projected risk for excess cancer cases associated with different exposure scenarios were developed for infants, children and adults. The results from these projections of the estimated excess cases of cancer generally fall within the range of risks currently found in our DW Radionuclides Rule (10^{-4} to 10^{-6}) for all projected doses evaluated (e.g., 4 mrem to 500 mrem).

There are a few exceptions where the risks levels approach the 10^{-3} for dose levels higher than 250 mrems/yr. (Please see attachment #3)

- Most of the evaluated doses fall within the risk range of the Radionuclides Rule beta and photon emitters MCL.
- Even at a low dose, newer dosimetry and a shorter duration will result in a PAG concentration orders of magnitude higher than our MCLs for individual nuclides.

Subpopulation of Concern:
Based on the calculated projections, infants and children 5 years old and younger appear to have the greatest risk from exposure to radionuclides in drinking water.

- A PAG developed to protect infants and children 5 years and younger would also be at least as protective to fetuses and developing embryos. (See Attachment #4)
- Selecting a PAG that protects infants/5 year children will be conservative in protecting other populations.

Recommendations:

- Recommend establishing a PAG that is a "do not drink" level based on combining infants, children 5 years and younger and pregnant women in the same subpopulation category.

- Recommend that a "do not drink" level (**i.e. mrem/yr level**) be established based on the risk levels developed from exposure to drinking water. Any other protective action could be based on a selected risk level for other subpopulations of interest.

- Recommend that I-131 be used as the main indicator for assessing risks for the radiological incident covered in the PAG Document.

- Recommend an exposure time frame of 1 year to assure consistency with the other intermediate phase components of the PAG.
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